

The relationship between temperament, gender, and behavioural problems in preschool children

Sibel Yoleri

Preschool Education Department, School of Education, Uşak University, Turkey
sibel.yoleri@usak.edu.tr

The aim of this study is to examine the relationship between gender and the temperamental characteristics of children between the ages of five and six, as well as to assess their behavioural problems. The sample included 128 children selected by simple random sampling from 5-6 year old children, receiving preschool education in the city centre of İzmir province in Turkey. Of the children, 65 were girls (50.8%) and 63 (49.2%) were boys. The data collection instruments were the Preschool and Kindergarten Behavior Scales and the Short Temperament Scale for Children, respectively. The results of this study reveal that there is no significant difference between gender and the child temperament subscales of approach/withdrawal; persistence and rhythmicity; and a child's behavioural problems, respectively. However, the gender of the children was found to be significantly related to the reactivity sub-dimension of their temperament ($p < 0.05$). Moreover, a significant correlation was observed between the temperament subscale of reactivity and externalising problems subscale of behavioural problems ($p < 0.05$). On the other hand, a negative correlation was observed between the persistence temperament dimension and the behavioural problem dimension of self-centredness ($p < 0.05$). In the opinion of the researcher, it is important to know the children's personality features, monitor their behaviour, and take respective measures when necessary. These research results contributed positively to this end.

Keywords: behavioural problems; gender; preschool children; temperament

Introduction

Preschool education proves to be a critical period for cognitive development, school readiness and achievement, language development, learning motivation, as well as social and emotional development of children (Barnard, 2001; Burger, 2010; Draper, Archmat, Forbes & Lambert, 2012; Senemoğlu, 2011). Preschool is also a period during which children have their first experiences of school. At this age, the child may not simply adjust to the new rules and limitations, but instead, may respond by displaying behavioural problems.

Any tensions arising from change and difficulties encountered at the start of preschool education for a child may cause behavioural problems (Creasey, Mitts & Catanzaro, 1995). Studies have shown that children of preschool age are at risk of displaying behavioural problems (Harden, Winslow, Kendziora, Shahinfar, Rubin, Fox, Crowley & Zahn-Waxler, 2000). In fact, behavioural problems are quite widespread amongst preschool children, due to the fact that they do not always easily adapt to the more structured environment of school. Studies have found that approximately

10-15% of children at preschool age display recurring behavioural problems (Campbell, 1995; Herrera & Little, 2005; Schaefer, Shur, Summers & MacDonald, 2004).

There may be various causes attributable to adaptation and behavioural problems amongst preschool children, such as biological, environmental and emotional factors, which can become apparent in individual differences in child characteristics; for example temperamental dimensions such as activity, sociability, and attention (as seen in Gardner & Shaw, 2008). According to Barker (1984 cited in Profeta, 2002:8), there are four main factors which may cause the emergence of behavioural problems in children, namely: structural factors; physical discomfort or injury; environmental factors; and factors related to temperamental dimensions of the children.

Numerous researchers have conducted studies on the influence of temperament on the behaviour of children (Calkins & Degnan, 2006; Prior, Smart, Sanson, Pedlow & Oberklaid, 1992; Shaw, Owens, Giovannelli & Winslow, 2001). The Australian Temperament Project (Prior et al., 1992), the Bloomington Longitudinal Study (Bates, Bayles, Bennet, Ridge, & Brown, 1991), and the Dunedin Multidisciplinary Health and Development Study (Caspi, Henry, McGee, Moffitt & Silva, 1995) have all cited a relationship between temperamental characteristics and behavioural problems, which appear to emerge later. Temperament is connected with behavioural issues, which include both internalised and externalised problems (Saudino, 2005). Externalising problems include aggressive and delinquent behaviour, such as opposing behaviours, aggressiveness, violation of social rules, disobedience, and/or stealing. Internalising problems include anxiety, depression, somatic complaints and social withdrawal (Bongers, Koot, Van der Ende & Verhulst, 2003; Campbell, Shaw & Gilliom, 2000).

This study assesses the role of temperament in determining behavioural problems, with a working definition of temperament taken as those determining styles of behaviour specific to the individual (Kristal, 2005). The definition of temperament as generally accepted today is as of biological origin, and is developed in the earlier stages of life, remaining stable for the rest of one's life (Bates, 1989; Buss & Plomin, 1984; Keogh, 2003; Rothbart & Derryberry, 1981; Thomas & Chess, 1977 cited by Ma, 2006). Thomas, Chess, Birch, Hertzig & Korn (1963) are known to be the pioneers of temperament research conducted in the childhood period. The New York Longitudinal Study identified that each child's behavioural style depends on nine different temperament characteristics, or traits, and three basic temperament types. These nine dimensions (Oliver, 2002:1) can be described as follows:

Activity level, where for example, 'the child is either always moving and doing something or has a more relaxed style'; rhythmicity, where for example, 'the child is either regular in his or her eating and sleeping habits or somewhat haphazard'; approach/withdrawal, where for example, 'the child is either friendly with strangers or tends to shy away from new people or things'; adaptability, where for example, 'the child either adjusts to changes in routines or plans easily or resists transitions'; intensity, where for example, 'the child either reacts strongly to situ-

ations either positive or negative or reacts calmly and quietly'; mood, where for example, 'the child either expresses a negative outlook or is generally a positive person'; persistence and attention span, where for example, 'the child either gives up as soon as a problem arises with a task or keeps on trying'; distractibility, where for example, 'the child is either easily distracted from what he is doing or shuts out external distractions and stays with the current activity'; and sensory threshold, where for example, 'the child is either bothered by external stimuli or tends to ignore them'.

These traits combine to form three basic types of temperament:

- Easy or flexible children: Generally calm, happy, regular in sleeping and eating habits, adaptable and not easily upset (characterised by high rhythmicity, positive mood, high approach, and high adaptability).
- Difficult, active or feisty children: Often fussy, irregular in feeding and sleeping habits, fearful of new people and situations, easily upset by noise and commotion, highly strung, and intense in their reactions (characterised by: high activity, withdrawal, low adaptability, negative mood and low intensity).
- Slow to warm up or cautious children: Relatively inactive and fussy, tend to withdraw or to react negatively to new situations, but reactions become more positive with continuous exposure (characterised by low activity, withdrawal, low adaptability) (Campos, Barrett, Lamb, Goldsmith & Stenberg, 1983; Zentner & Bates, 2008).

There is a strong correlation between children's behavioural problems and their temperamental characteristics (Moon, 2001). That is to say, certain aspects of temperament may have an influence on the incompatibilities and problematic behaviours seen amongst children (Putnam, Sanson & Rothbart, 2002; Sanson, Hemphill & Smart, 2002). For instance, it is probable that one would come across more challenging temperamental characteristics amongst aggressive children (Kingston & Prior, 1995; Tschann, Kaiser, Chesney, Alkon & Boyce, 1996).

Research findings have revealed that the temperamental traits of approach/withdrawal and persistence are associated with positive emotional and behavioural adaptation (Kyriosis & Prior, 1990; Youngblade & Mulvihill, 1998), while reactional and impulsive temperaments are associated with problematic social skills (Sanson, Smart, Prior, Oberklaid & Pedlow, 1994). Similarly, numerous studies have revealed that a high level of activity amongst children has a significant association with behavioural problems (Barron & Earls, 1984; Fagan, 1990). For instance, Fagan (1990) found a meaningful association between the emotional intensity, activity level and attention deficit observed amongst children at preschool level, and their behavioural problems.

Researchers indicate that the relationship between behavioural problems and gender is important, but have reported a difference in the manner of relationships observed between temperament and behavioural problems for girls and boys. Many

studies point to boys showing significantly more behavioural problems than girls (Duncan, Brooks-Gunn & Klebanow, 1994; Eiden, 1999; Kaiser, Hancock, Cai, Foster & Hester, 2000; Lavigne, Gibbons, Christoffel, Arend, Rosenbaum, Binns, Dawson, Sobel & Isaacs, 1996). Boys are frequently rated higher in activity level and impulsivity (Gunnar, Sebanc, Tout, Donzella & Van Dulmen, 2003; Mendez, McDermott & Fantuzzo, 2002). For instance, in their study, Maccoby and Jacklin (1980) maintained that 6 year old boys were more aggressive than their female peers. Martin, Wisenbaker and Baker (1997) have investigated whether temperament traits differed in relation to gender, finding that boys' activity levels were higher, and their adaptation levels were lower. Gleason, Gower, Hohmann and Gleason (2005) have stressed the components of gender and temperament (activity level, impulsivity and soothability) to be related to certain aspects of the development of friendship by children during the preschool period.

The focus of this study is behavioural problems and temperamental tendencies that emerge at the preschool age, which may be dealt with in that period; and the study proposes that tendencies spotted at this early stage predetermine many problems that will occur in the academic and social fields in later years. Hence, I argue that these may be avoided or dealt with timely where intervention at preschool age is taken. On the other hand, it is important to consider the impact that a child's gender can have on temperament and behavioural problems. There are a limited number of studies being conducted in Turkey at present on the temperamental traits and behavioural problems of children of preschool age (Yağmurlu & Altan, 2010; Öneren-Şendil, 2010; Gülay, 2011). Further to this, no study has been found which concurrently deals with the gender, temperamental features and behavioural problems that often surface during the preschool period. It is argued that there is a need to conduct such studies in Turkey aimed at curtailing behavioural problems during the preschool period, that may continue to grow or present problems for children as they mature. Thus, the purpose of this study is to contribute to current understanding by investigating the relationship between behavioural problems and the gender and temperamental characteristics of Turkish children between the ages of five and six. The study sought to answer the following questions:

Is there a relationship between gender, the level of approach/withdrawal and level of behavioural problems amongst preschool children?

Is there a relationship between gender, the level of persistence and level of behavioural problems amongst preschool children?

Is there a relationship between gender, the level of reactivity and level of behavioural problems amongst preschool children?

Is there a relationship between gender, the level of rhythmicity and level of behavioural problems amongst preschool children?

Research design and methodology

In order to examine the relationships between behavioural problems and the tempera-

ment traits of preschool children, this study used a relational survey model to collect quantitative data. The relational survey model is a research model similar to other types of survey model, designed to determine the presence and the level of change variance between two or more variables (Karasar, 2005).

Participants

The sample for this research comprised 128 children between the ages of five and six, attending private kindergartens in the city of İzmir under the administration of the Ministry of National Education of Turkey. The sample group was chosen by means of a simple, randomized sampling method. The sampling method involved drawing lots amongst the names of preschoolers in the city center of İzmir, affiliated with the İzmir National Education Directorate. Seven of the selected schools accepted the invitation to participate in the study. The 128 children with normal development came from the six kindergarten classes in these seven schools. The socio-economic status ranged from lower-middle to upper-middle class; where 49.2% ($n = 63$) of the 128 children were boys, and 50.8% ($n = 65$) were girls. The average age of the children was five years, and eight months.

Measuring instruments

In order to measure temperamental characteristics of the children in the sample, their mothers completed the Turkish version (Yağmurlu & Sanson, 2009) of the Short Temperament Scale for Children (STSC) (Prior, Sanson & Oberklaid, 1989). The mothers evaluated their children's temperamental characteristics on a basis of a Likert-type scale, with six frequency choices. The scale consists of 30 items with four subscales, which measured approach/withdrawal, persistence, rhythmicity and reactivity dimensions. Sample items for dimensions were: Approach/withdrawal, (N 14 items) e.g. "My child is shy when first meeting new children"; Persistence (N 14 items) e.g. "My child is unwilling to leave a game or activity that he/she has not completed"; Reactivity (N 14 items) e.g. "If my child resists some activity such as having hair brushed, he/she will continue to resist it for months"; and Rhythmicity (N 14 items) e.g. "After my child is put to bed at night, he/she takes about the same length of time to fall asleep". The scale has proved to be a reliable form of measurement, with an average Cronbach Alpha of 0.75 for the reactivity subscale; 0.75 for the approach/withdrawal subscale; 0.75 for the persistence subscale; and 0.53 for the rhythmicity subscale.

Merrell developed the Preschool and Kindergarten Behavior Scales Second Edition (PKBS-2) in 2002, and Alisinanoğlu and Özbeý (2009) conducted reliability-validity studies on the scale for the Turkish version. The PKBS-2 is used to assess children's social skills and behavioural problems at home and in kindergarten. The scale is a norm-referenced, standardised rating scale that can be used by parents or teachers to assess social skills and behavioural problem levels in children between 3 to 6 years of age. Items are rated on a four point scale (never, rarely, sometimes, and

often) reliant upon the parent and teacher in order to determine how true each item may be for that child, whether currently or over the past three months. Internal consistency reliability for the original scale ranges from 0.96 to 0.97 for the two scale totals, and from 0.81 to 0.95 for the subscales (Alisinanoğlu & Özbeý, 2009). In the current study, the Turkish version of Cronbach's alpha internal reliability coefficient for the whole problem behaviour scale was found to be 0.96; and in the problem behaviour subscales the externalising problems were found to be 0.95, internalising problems were found to be 0.87; while antisocial behaviour found to be 0.81 and self-centred behaviour found to be 0.72. In keeping with these analyses, the scale was deemed valid and reliable.

Data collection procedure and ethical measures

First of all, the necessary documents related to this study were prepared and given to the Ministry of Education in order to obtain permission in writing to collect data in schools. The data were collected from the mothers and teachers of the children through the applied scales. Mothers and teachers of the children were informed about the objective of the research and measurement tools prior to the data collection process. Mothers were informed about the study and the procedure, and were asked for consent for their children to participate in the study. After permission was granted by the mothers of the children, the mothers were requested to fill in a form related to their child's temperament. The mothers filled out the STSC, while the teachers of the participating children completed the PKBS-2. Teachers completed the forms based on the observations of the children over a period of approximately six months.

Data analysis

Data on the printed instruments was recorded on a personal computer. The data gathered were analysed using the SPSS 18.0 software programme. Children's total points were evaluated for their temperament and behavioural problem variables for each subscale. Descriptive statistical techniques were applied, and the mean and standard deviations (SD) calculated. The Pearson correlation coefficient technique was used in order to determine relationships amongst the respective subscales of temperament and behavioural problems.

Results

Table 1 shows that no significant difference was found between the approach/withdrawal scores of children in relation to gender. In addition, no significant difference was found between the externalising problems, internalising problems, and anti-social and self-centred scores of children in relation to approach/withdrawal. However, the level of externalising and internalising problems and anti-social and self-centred scores was found to decrease in line with an increase in the level of approach/withdrawal in the children.

Table 1 Pearson product-moment correlations of approach/withdrawal and between gender and behavioural problem variables

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
Approach/withdrawal	28.45	6.51	-					
Gender	1.49	0.50	-0.11	-				
Externalising problems	40.90	8.16	0.05	0.13	-			
Internalising problems	10.64	3.53	-0.02	0.01	0.17	-		
Anti-social	7.15	2.75	-0.03	0.00	-0.03	0.46**	-	
Self-centred	7.28	2.18	0.01	0.08	0.32**	0.26**	0.08	-

Note: *N* = 128; **p* < 0.05; ***p* < 0.001.

Table 2 Pearson product-moment correlations of persistence and between gender and behavioural problem variables

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
Persistence	26.81	6.78	-					
Gender	1.49	0.50	-0.07	-				
Externalising problems	40.90	8.16	-0.15	0.13	-			
Internalising problems	10.64	3.53	-0.12	0.01	0.17	-		
Anti-social	7.15	2.75	-0.04	0.00	-0.03	0.46**	-	
Self-centred	7.28	2.18	-0.18*	0.08	0.32**	0.26**	-0.08	-

Note: *N* = 128; ***p* < 0.001.

Table 3 Pearson product-moment correlations of reactivity and between gender and behavioural problem variables

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
Reactivity	27.25	7.56	-					
Gender	1.49	0.50	0.27**	-				
Externalising problems	40.90	8.16	0.18**	0.13	-			
Internalising problems	10.64	3.53	-0.07	0.01	0.17	-		
Anti-social	7.15	2.75	-0.12	0.00	-0.03	0.46**	-	
Self-centred	7.28	2.18	-0.01	0.08	0.32**	0.26**	-0.08	-

Note: $N = 128$; * $p < 0.05$; ** $p < 0.001$.

Table 5 Pearson product-moment correlations of rhythmicity and between gender and behavioural problem variables

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
Rhythmicity	27.72	4.22	-					
Gender	1.49	0.50	-0.02	-				
Externalising problems	40.90	8.16	-0.15	0.13	-			
Internalising problems	10.64	3.53	-0.07	0.01	0.17	-		
Anti-social	7.15	2.75	-0.06	0.00	-0.03	0.46**	-	
Self-centred	7.28	2.18	-0.12	0.08	0.32**	0.26**	-0.08	-

Note: $N = 128$; ** $p < 0.001$.

Table 4 Reactivity subscale points of the *t* test scores according to gender

Variable	Female <i>N</i> = 65	Male <i>N</i> = 63	<i>t</i>	<i>p</i>
Reactivity	25.23±8.098	29.34±6.378	-3.19	0.00**

** $p < 0.01$

Table 2 demonstrates that gender is not significantly related to persistence. Likewise, no statistically significant difference was found between the persistence scores of children in relation to externalising problems, internalising problems, and anti-social behaviour. Moreover, there was a negative correlation between the persistence subscale and self-centredness ($p < 0.05$). The level of self-centredness shows an increase with a decrease in the level of persistence amongst children, and decreases with increases in the level of persistence.

Table 3 shows a positively significant correlation between the subscales of temperament, such as reactivity and externalising problems ($p < 0.05$). The level of externalising problems increases, together with an increase in the level of reactivity in children. There were no significant correlations between internalising problems, anti-social and self-centred subscales and reactivity scores. The reactivity scores of children are, however, significantly related to gender ($p < 0.001$).

The mean scores for each variable and gender distribution of the participants are shown in Table 4.

Table 4 shows that the total score of boys ($M = 29.34$) on the reactivity subscale was higher than the total score of girls ($M = 25.23$). This indicates that gender is significantly related to the reactivity temperament subscale ($p < 0.01$).

As shown in Table 5, no statistically significant difference was found between the rhythmicity scores and externalising problems, internalising problems, anti-social and self-centred subscale scores. Also, no statistically significant difference was found between the rhythmicity scores of children in relation to gender.

Discussion

Many researchers have replicated the finding that aspects of temperament relate to behavioural adjustment when measured concurrently during the pre-school years (Barron & Earls, 1984; Fagan, 1990; Webster-Stratton & Eyberg, 1982), or middle childhood years (Guerin, Gottfried, Oliver & Thomas, 1997; Teglasi & MacMahon, 1990). Similarly, studies measuring prospective temperament traits, initiated in the first year of life as compared to later in life, demonstrate the relationships between these traits and subsequently assessed behavioural problems (Guerin et al., 1997). The goal of this study was to explore the role of gender, temperament and behavioural problems in preschool children.

In this study, a correlative analysis revealed no significant associations between children's gender and approach/withdrawal, persistence and rhythmicity temperament

dimensions and any of the behavioural problem scores. However, the reactivity scores of children are significantly related to gender, with the reactivity levels of boys found to be higher than those of girls. The research findings of this study thus show that the reactivity scores of boys are higher than those of girls. Other studies previously conducted on the subject also show findings corresponding to these results, where numerous researchers have found that gender is linked with behavioural problems for preschool boys, but not for girls (Prakash & Coplan, 2007; Davidson & Demaray, 2007). Generally, boys are found to be more active due to biological predisposition. Research conducted by Dodge, Lansford, Burks, Bates, Pettit, Fontaine and Price (2003) determined that aggressive behaviour may indeed vary with gender, and that boys may display more aggressive behaviours than girls. Similarly, Walker (2004) determined that boys are prone to display more aggressive behaviours. Yoleri and Gür?im?ek (2012) investigated the relationship between genders and temperamental characteristics of 5-6 year old children, where the results revealed that reactivity scores of boys are higher than those of girls. Schmidt, Demulder and Denham (2002) found that boys are significantly less socially competent, and more angry/aggressive as well as anxious/withdrawn than girls. According to the researchers, boys are at an increased risk of externalising problems such as anti-social behaviour, attention problems, and aggressive behaviour (Bongers et al., 2003; Else-Quest, Hyde, Goldsmith & Van Hulle, 2006). In the preschool period, shy and withdrawn boys encounter more behavioural problems than do girls (Christensen, Young & Marchant, 2007).

Furthermore, in this study, there were no significant correlations between internalising problems and anti-social subscales of behavioural problems on the approach/withdrawal, persistence and rhythmicity scores when it came to the sub-dimension of their temperament. On the other hand, there was a significant negative correlation between the persistence subscale and self-centred behaviour. A positive, statistically significant difference was found between the subscales of temperament, such as reactivity, and externalising problems. Results of other studies show a similarity with these results, where for example, findings of the Australian Temperament Project (Kyrios & Prior, 1990; Sanson, et al., 1994) showed points on reactivity to be associated with problematic social behaviours. Other research findings show that approach/withdrawal and temperamental traits of persistence tend to elicit positive emotions and behavioural adaptation (Kyrios & Prior, 1990; Youngblade & Mulvihill, 1998), whereas reactive and impulsive temperamental traits correlate with a prevalence of problematic social skills (Sanson et al., 1994). Research by Keenan, Shaw, Delliquadri, Giovannelli and Walsh (1998) offers evidence that such difficult temperamental traits and behavioural problems as aggression and disobedience, observed from two years of age and onwards, are indicators of the behavioural problems seen at older ages. In a study conducted by Öneren-Şendil (2010), the relationship between a child's gender and temperamental features was investigated amongst 42 children between five to six years of age. The research found that children with a higher level of reactivity as a temperamental characteristic, experienced more anger-aggression

behavioural problems.

Children's behavioural problems have been shown to negatively impact on a range of developmental, social, and educational outcomes (Campbell, 2002; Masten, Roisman, Long, Burt, Obradovic, Riley, Boelcke-Stennes & Tellegen, 2005; Pierce, Ewing & Campbell, 1999). Likewise, some studies show that infant temperament is linked to behavioural problems in childhood, delinquent behaviour in adolescence and later adjustment problems. For example, Caspi and colleagues showed that temperamental traits measured at three years of age were related to various outcomes well into adolescence and early adulthood (Caspi et al., 1995; Caspi & Silva, 1995; Henry, Caspi, Moffitt & Silva, 1996; Newman, Caspi, Moffitt & Silva, 1997).

Conclusion

Longitudinal studies offer evidence that the behavioural problems being determined in the preschool period generally lead the way to constant and joint problems within the classroom environment (Qi & Kaiser, 2003; Pianta & Stuhlman, 2004). Barron and Earls (1984) have pointed to the fact that early behavioural problems in the preschool period can predict serious psychological and behavioural problems at school and throughout adolescence, such as depression, suicidal tendencies and anxiety.

During the critical first six years of a child's life, it is important to know a child's features, monitor their behaviours, and take appropriate measures when necessary to stabilise the children in their growth. Many researchers have linked behavioural problems in preschool-aged children to cognitive and academic difficulties (Cunningham & Boyle, 2002; Keenan & Wakschlag, 2000; Landy & Menna, 2006; Lonigan, Hooe, David & Kistner, 1999; Sonuga-Barke, Lamparelli, Stevenson, Thompson & Henry, 1994; Youngwirth, Harvey, Gates, Hashim & Friedman-Weieneth, 2007). Behavioural problems present in the preschool period have demonstrated instability, and can affect later social and academic functioning. In order to intervene, there is a need to identify children who are at risk.

In closing, a few limitations to the current study ought to be noted here. Firstly, the sample size was small, with the study limited to 128 children. Further to this, the study focused exclusively on variables of temperament and behavioural problems. It is also important to note that the evaluation of behavioural problems of the preschool children was sought only from their teachers, while the temperamental traits only sought from their mothers. In future research, larger sample groups might be used. It may add further insight to investigate, the way in which other variables, such as social skills or language may, along with temperament, come to bear on lasting behaviour problems.

References

Alisinanoğlu F & Özbeý S 2009. Study of the validity and reliability of the preschool and kindergarten behaviour scale. *Mesleki Eğitim Fakültesi Dergisi*, 1:173-198 (Turkish).

Barnard WM 2001. Early Intervention, parent involvement in early schooling and long-term school success. Doctoral dissertation. Madison: University of Wisconsin.

Barron AP & Earls F 1984. The relation of temperament and social factors to behaviour problems in three-year-old children. *Journal of Child Psychology and Psychiatry*, 25(1):23-33.

Bates JE, Bayles K, Bennet DS, Ridge B & Brown MM 1991. Origins of externalizing behavior problems at eight years of age. In DJ Pepler & KH Rubin (eds). *The Development and Treatment of Childhood Aggression*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Bongers IL, Koot HM, Van der Ende J & Verhulst FC 2003. The normative development of child and adolescent problem behavior. *Journal of Abnormal Psychology*, 112(2):179-192. doi: 10.1037/0021-843X.112.2.179

Burger K 2010. How does early childhood care and education affect cognitive development? An international review of the effects of early interventions for children from different social backgrounds. *Early Childhood Research Quarterly*, 25(2):140-165. <http://dx.doi.org/10.1016/j.ecresq.2009.11.001>

Calkins SD & Degnan KA 2006. Temperament in early development. In R Ammerman (ed). *Comprehensive handbook of personality and psychopathology: Child psychopathology* (Vol. 3). Hoboken, NJ: Wiley.

Campbell SB 2002. *Behavior problems in preschool children: Clinical development issues* (2nd ed). New York/London: Guilford Press.

Campbell SB 1995. Behavior problems in preschool children: A review of recent research. *Journal of Child Psychology & Psychiatry*, 36(1):113-149.

Campbell SB, Shaw DS & Gilliom M 2000. Early externalizing behavior problems: Toddlers and preschoolers at risk for later maladjustment. *Development and Psychopathology*, 12(3):467-488.

Campos JJ, Barrett KC, Lamb ME, Goldsmith HH & Stenberg C 1983. Socioemotional development. In PH Mussen (ed) & MM Haith, JJ Campos (Vol. eds). *Handbook of Child Psychology: Infancy and Developmental Psychobiology* (4th ed, Vol. 2). New York: John Wiley.

Caspi A, Henry B, McGee RO, Moffitt TE & Silva PA 1995. Temperamental origins of child and adolescent behavior problems: From age three to age fifteen. *Child Development*, 66(1):55-68.

Caspi A & Silva PA 1995. Temperamental qualities at age three predict personality traits in young adulthood: Longitudinal evidence from a birth cohort. *Child Development*, 66(2):486-498. doi: 10.1111/j.1467-8624.1995.tb00885.x

Creasey G, Mitts N & Cantazaro S 1995. Associations among daily hassles, coping, and behavior problems in nonreferred kindergartners. *Journal of Clinical Child Psychology*, 24(3):311-319.

Christensen L, Young KR & Marchant M 2007. Behavioral intervention planning:

increasing appropriate behavior of a socially withdrawn student. *Education and Treatment of Children*, 30(4):81-103.

Cunningham CE & Boyle MH 2002. Preschoolers at risk for attention-deficit hyperactivity disorder and oppositional defiant disorder: family, parenting, and behavioral correlates. *Journal of Abnormal Child Psychology*, 30(6):555-569. Available at http://download.springer.com/static/pdf/884/art%253A10.1023%252FA%253A1020855429085.pdf?auth66=1394193852_16b4178c6cdb399f33f03c6627ea3319&ext=.pdf. Accessed 5 March 2014.

Davidson LM & Demaray MK 2007. Social support as a moderator between victimization and internalizing-externalizing distress from bullying. *School Psychology Review*, 36(3):383-405.

Dodge KA, Lansford JE, Burks VS, Bates JE, Pettit GS, Fontaine R & Price JM 2003. Peer rejection and social information-processing factors in the development of aggressive behavior problems in children. *Child Development*, 74(2):374-393. doi: 10.1111/1467-8624.7402004

Draper CE, Achmat M, Forbes J, & Lambert EV 2012. Impact of a community-based program for motor development on gross motor skills and cognitive function in preschool children from disadvantaged settings. *Early Child Development and Care*, 182(1):137-152.

Duncan GJ, Brooks-Gunn J & Klebanov PK 1994. Economic deprivation and early childhood development. *Child Development*, 65(2):296-318.

Eiden RD 1999. Exposure to violence and behavior problems during early childhood. *Journal of Interpersonal Violence*, 14(12):1299-1313. doi: 10.1177/088626099014012005

Else-Quest NM, Hyde JS, Goldsmith HH & Van Hulle CA 2006. Gender differences in temperament: A meta-analysis. *Psychological Bulletin*, 132(1):33-72. doi: 10.1037/0033-2909.132.1.33

Fagan J 1990. The interaction between child sex and temperament in predicting behavior problems of preschool-age children in day care. *Early Child Development and Care*, 59(1):1-9. doi: 10.1080/0300443900590101

Gardner F & Shaw DS 2008. Behavioral problems of infancy and preschool children (0-5). In M Rutter, D Bishop, D Pine, S Scott, J Stevenson, E Taylor & A Thapar (eds). *Rutter's Child and Adolescent Psychiatry* (5th ed). Massachusetts, USA: Blackwell Publishing.

Gleason TR, Gower AL, Hohmann LM & Gleason TC 2005. Temperament and friendship in preschool-aged children. *International Journal of Behavioral Development*, 29(4):336-344. doi: 10.1177/01650250544000116

Guerin DW, Gottfried AW, Oliver PH & Thomas CW 1997. Difficult temperament and behaviour problems: a longitudinal study from 1.5 to 12 years. *International Journal of Behavioral Development*, 21(1):71-90. doi:

10.1080/016502597384992

Gülay H 2011. Temperament and peer relations: investigating the effect the temperament of 5-6-year-olds has on their peer relations. *Early Child Development and Care*, 182(10):1383-1397. doi:1080/03004430.2011.615930

Gunnar MR, Sebanc AM, Tout K, Donzella B & Van Dulmen MM 2003. Peer rejection, temperament, and cortisol activity in preschoolers. *Developmental Psychobiology*, 43(4):346-358.

Harden BJ, Winslow MB, Kendziora KT, Shahinfar A, Rubin K, Fox NA, Crowley MJ & Zahn-Waxler C 2000. Externalizing problems in head start children: an ecological exploration. *Early Education & Development*, 11(3):357-385.

Henry B, Caspi A, Moffitt TE & Silva PA 1996. Temperamental and familial predictors of violent and nonviolent criminal convictions: Age 3 to age 18. *Developmental Psychology*, 32(4):614-623.

Herrera M & Little E 2005. Behaviour problems across home and kindergarten in an Australian Sample. *Australian Journal of Educational and Developmental Psychology*, 5:77-90.

Kaiser AP, Hancock TB, Cai X, Foster EM & Hester PP 2000. Parent-reported behavior problems and language delays in boys and girls enrolled in Head Start classrooms. *Behavioral Disorders*, 26(1):26-41.

Keenan K, Shaw D, Delliquadri E, Giovannelli J & Walsh B 1998. Evidence for the continuity of early problem behaviors: application of a developmental model. *Journal of Abnormal Child Psychology*, 26(6):441-454. Available at http://download.springer.com/static/pdf/409/art%253A10.1023%252FA%253A1022647717926.pdf?auth66=1394347483_132a64c1eb8f14a09efb8f4e31681844&ext=.pdf. Accessed 7 March 2014.

Keenan K & Wakschlag LS 2000. More than the Terrible Twos: The Nature and Severity of Behavior Problems in Clinic-Referred Preschool Children. *Journal of Abnormal Child Psychology*, 28(1):33-46.

Kingston L & Prior M 1995. The development of patterns of stable, transient, and school-age onset aggressive behavior in young children. *Journal of the American Academy of Child & Adolescent Psychiatry*, 34(3):348-358. <http://dx.doi.org/10.1097/00004583-199503000-00021>

Kristal J 2005. *The temperament Perspective: Working With Children's Behavioral Styles*. Baltimore, MD: Brookes Publishing.

Kyrios M & Prior M 1990. Temperament, stress and family factors in behavioral adjustment of 3-5 year-old children. *International Journal of Behavioral Development*, 13(1):67-93. doi: 10.1177/016502549001300105

Landy S & Menna R 2006. An evaluation of a group intervention for parents with aggressive young children: improvements in child functioning, maternal confidence, parenting knowledge and attitudes. *Early Child Development and Care*, 176(6):605-620. doi: 10.1080/03004430500147425

Lavigne JV, Gibbons RD, Christoffel KK, Arend R, Rosenbaum D, Binns H, Dawson N, Sobel H & Isaacs C 1996. Prevalence rates and correlates of psychiatric disorders among preschool children. *Journal of the American Academy of Child & Adolescent Psychiatry*, 35(2):204-214.
<http://dx.doi.org/10.1097/00004583-199602000-00014>

Lonigan CJ, Hooe ES, David CF & Kistner JA 1999. Positive and negative affectivity in children: Confirmatory factor analysis of a two-factor model and its relation to symptoms of anxiety and depression. *Journal of Consulting and Clinical Psychology*, 67(3):374-386. doi: 10.1037/0022-006X.67.3.374

Ma I 2006. Temperament and peer relationships. *Childhood Education*, 83(1):38.

Maccoby EE & Jacklin CN 1980. Sex differences in aggression: a rejoinder and reprise. *Child Development*, 51(4):964-980. doi: 10.2307/1129535

Martin RP, Wisenbaker J & Baker J 1997. Gender differences in temperament at 6 months and 5 years. *Infant Behavior and Development*, 20:339-347. doi: 10.1016/S0163-6383(97)90005-9

Masten AS, Roisman GI, Long JD, Burt KB, Obradovic J, Riley JR, Boelcke-Stennes K & Tellegen A 2005. Developmental cascades: Linking academic achievement and externalizing and internalizing symptoms over 20 years. *Developmental Psychology*, 41(5):733-746. doi: 0.1037/0012-1649.41.5.733

Mendez J, McDermott P & Fantuzzo J 2002. Identifying and promoting social competence with african-american preschool children: developmental and contextual considerations. *Psychology in the Schools*, 39(1):111-123. doi: 10.1002/pits.10039

Merrell KW 2002. *Preschool and Kindergarten Behavior Scales* (2nd ed). Austin, TX: Pro-Ed.

Moon M 2001. Teacher perspectives on peer relation problems of young children. *Asia Pacific Education Review*, 2(1):22-31. doi: 10.1007/BF03024929

Newman DL, Caspi A, Moffitt TE & Silva PA 1997. Antecedents of adult interpersonal functioning: Effects of individual differences in age 3 temperaments. *Developmental Psychology*, 33(2):206-217.

Oliver KK 2002. Understanding your child's temperament. *Family Life Month Packet*. Available at <http://ohioline.osu.edu/flm02/pdf/fs05.pdf>. Accessed 10 April 2012.

Öneren-Şendil Ç 2010. An investigation of social competence and behavioral problems of 5-6 year-old children through peer preference, temperament and gender. Master's thesis. Ankara, Turkey: Middle East University.

Pianta RC & Stuhlman MW 2004. Teacher-child relationships and children's success in the first years of school. *School Psychology Review*, 33(3):444-458.

Pierce EW, Ewing LJ & Campbell SB 1999. Diagnostic status and symptomatic behavior of hard-to-manage preschool children in middle childhood and early

adolescence. *Journal of Clinical Child Psychology*, 28(1):44-57.

Prakash K & Coplan RJ 2007. Socioemotional characteristics and school adjustment of socially withdrawn children in India. *International Journal of Behavioral Development*, 31(2):123-132. doi: 10.1177/0165025407073580

Prior M, Sanson A & Oberklaid F 1989. The Australian Temperament Project. In GA Kohnstamm, JE Bates & MK Rothbart (eds). *Temperament in childhood*. Chichester: Wiley.

Prior M, Smart D, Sanson A, Pedlow R & Oberklaid F 1992. Transient versus stable behavior problems in a normative sample: Infancy to school age. *Journal of Pediatric Psychology*, 17(4):423-443. doi: 10.1093/jpepsy/17.4.423

Putnam SP, Sanson AV & Rothbart MK 2002. Child temperament and parenting. In MH Bornstein (ed). *Handbook of parenting* (2nd ed). New Jersey: Lawrence Erlbaum Associates.

Qi CH & Kaiser AP 2003. Behavior problems of preschool children from low-income families: Review of the literature. *Topics in Early Childhood Special Education*, 23(4):188-216. doi: 10.1177/02711214030230040201

Sanson A, Hemphill S & Smart D 2002. Temperament and social development. In PK Smith & CH Hart (eds). *Handbook of childhood social development*. London: Blackwell.

Sanson AV, Smart DF, Prior M, Oberklaid F & Pedlow R 1994. The structure of temperament from age 3 to 7 years: age, sex, and sociodemographic influences. *Merrill-Palmer Quarterly*, 40(2):233-252. Available at <http://www.jstor.org/stable/23087863>. Accessed 10 March 2014.

Saudino KJ 2005. Behavioral genetics and child temperament. *Journal of Developmental and Behavioral Pediatrics: JDBP*, 26(3):214-223. Available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1188235/>. Accessed 10 March 2014.

Schaefer BA, Shur FK, Summers MM & MacDonald SL 2004. Preschool children's learning behaviors, concept attainment, social skills, and behavior problems: validity evidence for preschool learning behaviors scale scores. *Journal of Psychoeducational Assessment*, 22:15-32. doi: 10.1177/073428290402200102

Schmidt ME, Demulder EK & Denham SA 2002. Kindergarten social-emotional competence: developmental predictors and psychosocial implications. *Early Child Development and Care*, 172:451-462. Available at http://docenti.unich.it/camodeca/Home_Page_di_Marina_Camodeca/LM_-_secondo_EPG_files/denham%20predictors%202002.pdf. Accessed 10 March 2014.

Senemoğlu N 2011. *Development, learning and teaching: From theory to practice* (19th ed). Ankara: Pegem Akademi.

Shaw DS, Owens EB, Giovannelli J & Winslow EB 2001. Infant and toddler

pathways leading to early externalizing disorders. *Journal of the American Academy of Child and Adolescent Psychiatry*, 40(1):36-43.
<http://dx.doi.org/10.1097/00004583-200101000-00014>

Sonuga-Barke EJS, Lamparelli M, Stevenson J, Thompson M & Henry A 1994. Behaviour problems and preschool intellectual attainment: the associations of hyperactivity and conduct problems. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 35(5):949-960.

Teglasi H & MacMahon BH 1990. Temperament and common problem behaviors of children. *Journal of Applied Developmental Psychology*, 11(3):331-349.
[http://dx.doi.org/10.1016/0193-3973\(90\)90014-B](http://dx.doi.org/10.1016/0193-3973(90)90014-B)

Thomas A, Chess S, Birch HG, Hertzig ME & Korn S 1963. *Behavioural individuality in early childhood*. New York: New York University Press.

Tschann JM, Kaiser P, Chesney MA, Alkon A & Boyce WT 1996. Resilience and vulnerability among preschool children: family functioning, temperament, and behavior problems. *Journal of the American Academy of Child & Adolescent Psychiatry*, 35(2):184-192.
<http://dx.doi.org/10.1097/00004583-199602000-00012>

Walker S 2004. Teacher reports of social behavior and peer acceptance in early childhood: Sex and social status differences. *Child Study Journal*, 34(1):13-28.

Webster-Stratton C & Eyberg SM 1982. Child temperament: Relationships with child behavior problems and parent-child interactions. *Journal of Clinical Child Psychology*, 11(2):123-129. Available at <http://www.son.washington.edu/centers/parenting-clinic/opendocs/Child%20temperament1982.pdf>. Accessed 13 March 2014.

Yağmurlu B & Altan Ö 2010. Maternal socialization and child temperament as predictors of emotion regulation in Turkish preschoolers. *Infant and Child Development*, 19(3):275-296. doi: 10.1002/icd.646

Yağmurlu B & Sanson A 2009. The Role of child temperament, parenting and culture in the development of prosocial behaviors. *Australian Journal of Psychology*, 61(2):77-88.

Yoleri S & Gür?im?ek AI 2012. Temperamental characteristics and peer victimization among pre-school children. *International Journal of Global Education*, 1(1):54-65. Available at <http://www.ijge.net/ojs/index.php/ijge/article/view/14/8>. Accessed 13 March 2014.

Youngblade L & Mulvihill B 1998. Individual differences in homeless preschoolers' social behavior. *Journal of Applied Developmental Psychology*, 19(4):593-614. [http://dx.doi.org/10.1016/S0193-3973\(99\)80057-4](http://dx.doi.org/10.1016/S0193-3973(99)80057-4)

Youngwirth SD, Harvey EA, Gates EC, Hashim RL & Friedman-Weieneth JL 2007. Neuropsychological abilities of preschool-aged children who display hyperactivity and/or oppositional-defiant behavior problems. *Child*

Neuropsychology, 13(5):422-443. doi: 10.1080/13825580601025890

Zentner M & Bates JE 2008. Child temperament: an integrative review of concepts, research programs, and measures. *European Journal of Developmental Science*, 2(1/2):7-37. Available at http://www.unige.ch/fapse/emotion/tests/temperament/publications/ejds_02_01_zentner.pdf. Accessed 13 March 2014.